

Amendments to the Drawings:

The attached "New Sheet" of drawings includes a new FIG. 3. No new matter was added.

Attachment: One "New Sheet"

REMARKS

Claims 20, 23 and 28 have been canceled. Claims 1-3, 17-19, 21, 22, 24-27 and 29-33 are pending. Independent method claim 1 has been amended to include the limitations previously stated in claims 20, 23 and 28. No new matter was added. Arguments are presented for overcoming the rejection of the claims based on the prior art of record. For reasons stated herein, Applicant respectfully submits that the present application is in condition for allowance.

I. Drawing Objection

In the Office Action, the Examiner objects to the drawings as not showing every feature of the invention specified in the claims. More specifically, the Examiner states that "the helmet as set forth in claim 17" is not shown.

Applicant has added a new FIG. 3. New FIG. 3 is a plan view of the top of a helmet according to the present application.

No new matter was added. For example, see page 4, lines 13-16, of the present application, as filed, which states that:

"In order to form a generally hemispherical helmet portion, the stack of blanks is pushed in a concave cavity having a part-spherical surface. In doing so, the lobe portions 3 ride over the adjacent lobe portions of the same blank. This is achieved with remarkably little pushing force."

As clearly shown in FIG. 3, the illustrated hemispherical helmet is made from the square blanks shown in FIGs. 1 and 2 of the application, as filed. The square blanks of the helmet clearly include four curved cuts, and the lobe portions formed by the cuts are clearly shown to overlap.

Applicant respectfully submits that no new matter has been added to the application by the addition of FIG. 3 and that the features set forth in claim 17 are now illustrated in the

drawings of the present application. Accordingly, Applicant requests reconsideration and removal of the objection to the drawings.

II. Claim Rejections - 35 USC 103(a)

- A. *In the Office Action, the Examiner rejects claims 1, 21, 22, 24, 28, 29, 32 and 33 under 35 USC 103(a) as being obvious over U.S. Patent No. 2,610,322 issued to Daly in view of U.S. Patent No. 2,964,442 issued to Hansen;*
- B. *In the Office Action, the Examiner rejects claims 2, 3, 18 and 19 under 35 USC 103(a) as being obvious over Daly in view of Hansen and further in view of U.S. Patent No. 3,956,447 issued to Denommee et al.;*
- C. *In the Office Action, the Examiner rejects claim 30 under 35 USC 103(a) as being obvious over Daly in view Hansen and further in view of U.S. Patent No. 4,908,877 issued to White; and*
- D. *In the Office Action, the Examiner rejects claim 31 under 35 USC 103(a) as being obvious over Daly in view of Hansen and further in view of U.S. Patent No. 4,309,487 issued to Holmes.*

Independent method claim 1 of the present application has been amended to include the limitation previously stated in each of dependent claims 20 and 23. Accordingly, the method of claim 1 is required to include the step of making curved cuts in each blank. Claims 2, 3, 18, 19, 21, 22, 24 and 29-33 depend directly or indirectly from base independent claim 1 and include all the limitations of claim 1. Dependent claim 28 has been canceled.

Accordingly, Applicant respectfully submits that the above referenced rejections have been overcome based on the above referenced amendment of claim 1 of the present application. Applicant requests reconsideration and removal of these rejections.

- E. *In the Office Action, the Examiner rejects claims 23 and 25-27 under 35 USC 103(a) as being obvious over Daly in view of Hansen and further in view of U.S. Patent No. 3,582,990 issued to Frieder; and*
- F. *In the Office Action, the Examiner rejects claims 17 and 20 under 35 USC 103(a) as being obvious over Daly in view of Hansen and further in view of Denommee et al. and Frieder.*

Daly discloses blanks that are circular and include straight line cuts radiating from a central portion thereof (see reference numerals 25 and 26 in FIG. 3 of Daly). Hansen discloses square blanks without cuts. Frieder discloses a cruciform blank (see FIG. 1 of Frieder), and Denommee et al. disclose a star-shaped blank (see column 2, lines 53-62, of Denommee et al.).

With regards to independent method claim 1 of the present application, it has been amended to include the limitation requiring “making curved cuts in each blank to form a crown portion and lobe portions therefrom”. This limitation was previously required by dependent claims 20 and 23, now canceled. With respect to this limitation, the Examiner states that:

“It would have been obvious to one of ordinary skill in the art at the time of the invention to further modify the method of Daly ‘322 by making curved cuts in the manner of Frieder as per Figures 1 and 9 thus recognizing minimal material overlap in forming the perform.”

For the following reasons, Applicant respectfully disagrees that the invention set forth in claim 1 of the present invention is obvious to one of ordinary skill in the art based on Daly in view of Frieder.

Method claim 1 of the present application requires the steps of “cutting a plurality of substantially rectangular blanks from a sheet of fabric” and “making curved cuts in each blank to form a crown portion and lobe portions therefrom”. As admitted by the Examiner, the Daly, Hansen, and Denommee et al. references clearly fail to disclose a step of making curved cuts in a blank (Daly discloses straight line cuts; and Hansen and Denommee fail to disclose making any cuts). Although each arm of the cruciform blank of Frieder may have edges that are just slightly

curved, Frieder clearly fails to disclose the step of making curved cuts in “substantially rectangular blanks”. For example, FIG. 1 of Frieder shows a complex cruciform blank, and FIG. 9 of Frieder shows a laminate made from the blank illustrated in dashed lines in FIG. 1. Accordingly, the blank of Frieder disclosed in FIGs. 1 and 9 has a complex cruciform structure and is not “substantially rectangular”.

The significance of this limitation is stated on page 1, lines 15-22, of the present application, as filed. In making the “pinwheel” or “cruciform” blank of Frieder, a significant amount of fabric must be cut away from the blank and discarded as waste. This is undesirable because such fiber is very expensive and is subject to worldwide shortages. In addition, it takes a relatively long time to make all the cuts required by Frieder and Daly since many separate cuts have to be made in entirely different directions.

According to the present invention, the blanks used to construct a helmet are “substantially rectangular” and include curved cuts (see FIG. 1 and page 2, lines 1-2, of the present application, as filed). Thus, there is no wasted material and cuts can be limited to as few as four cuts per blank instead of twelve required by the cruciform blank of Frieder and seven required by Daly.

Applicant respectfully submits that the Frieder patent “teaches away” from the invention of claim 1 of the present application. Frieder teaches the formation of complex cruciform blanks resulting in significant waste of expensive materials that are subject to shortages. For example, the corner portions of an initial blank must be completely cut away and discarded to form the complex cruciform shape disclosed and taught by Frieder.

Daly also fails to disclose a method using a substantially rectangular blank in which cuts are made. The formation of circular blanks would also require material to be cut away and discarded as waste.

Applicant respectfully submits that there would have been no reason for one of ordinary skill in the art to modify the blank of Daly with curved cuts according to Frieder. The only reason for the curved cuts of Frieder is to form a cruciform blank that, when positioned in a hemispherical shape, does not overlap (see FIG. 2 of Frieder) or just barely overlaps an amount only sufficient to apply a stitch (see FIG. 9 of Frieder). The blank of Daly is circular, and there would be no reason to cut material therefrom to form a cruciform blank. If one of ordinary skill in the art did modify Daly according to Frieder, the resultant would be cruciform, not substantially rectangular.

Applicant respectfully submits that there must be a basis stated in the art for combining or modifying the references in the manner suggested by the Examiner in the Office Action. The mere fact that the references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. In the Office Action, the Examiner states that the basis is “recognizing minimal material overlap in forming the preform”. However, this is opposite of the present invention and teaches away from the present invention. The present invention utilizes “substantially rectangular” blanks to minimize waste, not to minimize overlap. In fact, claim 1 of the present invention specifically requires overlap, and the application states that a stronger helmet can be produced (see page 1, line 25, to page 2, line 2 and page 5, lines 1-4, of the present application, as filed).

Further, claim 1 of the present application has been amended to include the limitation previously stated in dependent claim 28. Thus, claim 1 requires the step of “arranging a stack of

said sheets into a helmet preform by pushing the stack of blanks into a substantially hemispherical cavity so as to cause the lobe portions of each blank to partially overlap adjacent lobe portions of the same blank".

Thus, unlike Frieder, significant overlap is desired in the present invention. An advantage of the present invention is stated on page 2, lines 20-25, of the present application which states:

"We have discovered that by forming such curved cuts, the arranging step, which preferably comprises pushing the stack of blanks into a substantially hemispherical cavity, requires very little force as the lobe portions of each blank close up and partially overlap somewhat like the iris of a camera."

This provides a significant advantage over the blanks of Daly, Hansen and Denommee et al., and is the opposite of Frieder which eliminates or extremely reduces overlap by cutting away and discarding material of the blanks.

Accordingly, Applicant respectfully submits that the blanks of Frieder are not "substantially rectangular" and that it is certainly not obvious based on any combination of Frieder, Daly, Hansen and Denommee et al. that a method should utilize a blank as specified in method claim 1, as amended, of the present application. According to the present invention, a helmet can be produced with a minimum of wastage of blank material while also providing improvements in strength and consistency of performance. Frieder forms a complex cruciform blank with significant wastage to extremely reduce and/or eliminate overlap. Only if a complex cruciform blank was desired to eliminate or severely minimize overlap would one of skill in the art modify the blank of Daly with the cuts of Frieder. However, such a combination would not obviate claim 1 of the present application and achieve the advantages of easy formation, enhanced strength and consistency, and reduced wastage.

Accordingly, Applicant respectfully requests reconsideration and removal of the above referenced rejections of method claims 1 and 25-27 which are submitted as being non-obvious and patentable over the cited references.

Turning to claim 17, it requires a helmet made from a stack of blanks. Each blank is required to be a “rectangle” and have “four curved cuts extending, inwardly, one from each side of the rectangle”. Accordingly, for the same reasons discussed above with respect to claim 1, Applicant respectfully submits that claim 17 is patentable over Daly in view of Hansen, further of view of Denommee et al. and further in view of Frieder. The only disclosure of Frieder is the use of curved cuts to form a complex cruciform blank shape. The use of rectangular blank and curved cuts without eliminating blank material as wastage is simply not disclose, suggested, or taught by any of the cited references, and certainly not by Frieder.

Accordingly, Applicant respectfully requests reconsideration and removal of the above referenced rejection of claim 17.

III. Conclusion

In view of the above amendments and remarks, Applicant respectfully submits that the rejections have been overcome and that the present application is in condition for allowance. Thus, a favorable action on the merits is therefore requested.

Please charge any deficiency or credit any overpayment for entering this Amendment to our deposit account no. 08-3040.

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